

AMENDMENTS TO THE CLAIMS

1. (Previously Presented) An underpinning pile system for lifting and underpinning a settling foundation characterised by comprising:

a pile;

a transfer beam having an opening for receiving the upper end of the pile, the transfer beam being arranged to engage with the foundation on at least two points, one either side of said opening;

a pile anchor head receivable in the opening in the transfer beam, the pile anchor head having a hollow section for receiving the upper end of the pile and a portion arranged to engage with the transfer beam adjacent the opening; and

a jacking means engageable with the transfer beam and the upper end of the pile;

wherein the jacking means exerts a force on the upper end of the pile to drive the pile downwardly relative to the stationary transfer beam.

2. (Original) An underpinning pile system in accordance with claim 1, characterised in that the pile anchor head includes a locking means for securing movement of the pile relative to the pile anchor head once the pile is driven into position under a jacking load.

3. (Original) An underpinning pile in accordance with claim 2, characterised in that the locking means comprises an anchor plate securable across the hollow section to bear on top of the pile.

4. (Original) An underpinning pile in accordance with claim 3 characterised in that the pile anchor head comprises a hollow member having a tabular cross section complementary to the cross sectional shape of the pile.

5. (Original) An underpinning pile in accordance with claim 3, characterised in that the cross section of the hollow member is complementary to the shape of the anchor plate such that the anchor plate is secured within the hollow member against the upper end of the pile by welding to inner surfaces of the hollow member.

6. (Currently Amended) An underpinning pile in accordance with ~~any one of the preceding claims~~ claim 1, characterised in that the portion of the pile anchor head that engages with the transfer beam comprises a plurality of flanges that engage with an underside of the transfer beam.

7. (Currently Amended) An underpinning pile in accordance with ~~any one of the preceding claims~~ claim 1 characterised in that the transfer beam comprises two members secured parallel to and separated from each other to define the opening.

8. (Original) An underpinning pile in accordance with claim 7, characterised in that the members each comprise a C-channel members arranged with open sides thereof oriented in opposite directions.

9. (Currently Amended) An underpinning pile in accordance with ~~any one of the preceding claims~~ claim 1, characterised in that the jacking means comprises an inverted U-shaped thrust block and a jack, the inverted U-shaped thrust block arranged such that ends of parallel legs of the thrust block extend downwardly through the opening in the transfer beam on either side of the pile and engage with the transfer beam, and the jack engages between the upper horizontal member of the inverted U-shaped thrust block and the upper end of the pile to force the pile downwardly relative to the thrust block.

10. (Original) An underpinning pile in accordance with claim 9, characterised in that the ends of the legs of the inverted U-shaped thrust block are provided with holes to receive locking pins such that when the holes are positioned below the transfer beam and the locking pins are inserted through the holes, the locking pins engage with the lower surface of the transfer beam to resist upward movement of the U-shaped thrust block relative to the transfer beam.

11. (Original) An underpinning pile in accordance with claim 10, characterised in that the legs of the U-shaped thrust block include outwardly extending wedges, the wedges engaging with an upper surface of the transfer beam when the U-shaped thrust block is inserted downwardly through the opening in the transfer beam.

12. (Previously Presented) A method for installing an underpinning pile system for lifting and underpinning a settling foundation characterised by comprising the steps of:
excavating a hole adjacent to the foundation;

placing a transfer beam having an opening for receiving the upper end of a pile in the excavated hole, the transfer beam being arranged to engage with the foundation on at least two points, one either side of said opening;

placing a pile anchor head having a hollow section for receiving the upper end of the pile in the opening in the transfer beam such that the pile anchor head engages with the transfer beam adjacent the opening;

placing a pile through the hollow section in the pile anchor head;

engaging a jacking means with the transfer beam and the upper end of the pile; and driving the pile downwardly relative to the stationary transfer beam by operation of the jacking means.

13. (Original) A method for installing an underpinning pile system in accordance with claim 12, characterised by including the step of securing any further movement of the pile relative to the pile anchor head once the pile is driven into position and loaded with a locking means to engage the pile with the pile anchor head.

14. (Original) A method for installing an underpinning pile system in accordance with claim 13, characterised by including the steps of driving the pile downwardly until the upper end of the pile is within the hollow section of the pile anchor head and inserting an anchor plate into the hollow section to bear on the top of the pile and welding the anchor plate to internal surfaces of the hollow section of the pile anchor head.

15. (Currently Amended) A method for installing an underpinning pile system in accordance with ~~any one of claims 12 to 14~~ claim 12, characterised in that engaging the jacking means with the transfer beam and the pile comprises the steps of:

inserting legs of an inverted U-shaped thrust block downwardly through the opening in the transfer beam such that the legs are positioned on opposite sides of the pile;

engaging ends of the legs with the transfer beam; and

inserting a jack between the upper end of the pile and a lower side of a horizontal member of the inverted U-shaped thrust block.

16. (Original) A method for installing an underpinning pile system in accordance with claim 15, characterised in that locking pins are inserted through holes provided in the ends of the legs of the inverted U-shaped thrust block when the ends of the legs are located below the transfer beam, such that the locking pins engage with a lower surface of the transfer beam and thereby resist upward movement of the inverted U-shaped thrust block relative to the transfer beam.

17. (Original) A method for installing an underpinning pile system in accordance with claim 16 characterised in that the step of driving the pile downwardly relative to the transfer beam comprises the step of extending the jack to force the pile downwardly relative to the thrust block.

18. (Currently Amended) A method for installing an underpinning pile system in accordance with ~~any one of the preceding claims~~ claim 1 including the step of securing the pile anchor head to the transfer beam once the pile is driven into position and secured to the pile anchor head.

19. (Currently Amended) A method for installing an underpinning pile system in accordance with claim ~~19~~ 18 characterised by placing a plurality of wedges such that the wedges engage against the pile anchor head and the transfer beam, and welding the wedges to the transfer beam and the pile anchor head.